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**Pittsburgh Tuskegee Prostate Training Program**

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CONTRACTING ORGANIZATION:

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Pittsburgh, PA 15213-2303

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| 14. ABSTRACT<br>Prostate cancer disproportionately afflicts African-American men. As such, we feel that it is critically important to recruit researchers from this population if we are to conquer this disease. Numerous programs have attempted to recruit minorities to biomedical research and prostate cancer in particular. Often this involves a short period of research immersion during a summer semester. However, it has been shown that many of these trainees do not persevere in the selected area due to the singular nature of the experience. Our goal is to formalize a program to broaden the scope of and enlarge Tuskegee University's prostate cancer research , which will be accomplished through targetinginterested undergraduate students early during their science studies at Tuskegee University and enabling them to participate in summer research and education training periods at the University of Pittsburgh and the University of Pittsburgh Cancer Institute as part of their overall prostate cancer education. |                             |                                  |                            |   |   |
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**DoD Award W81XWH-12-1-0178**

**Pittsburgh-Tuskegee Prostate Training Program**

**Alan Wells (Univ Pittsburgh)  
Timothy Turner (Tuskegee Univ)**

**Table of Contents**

|                                   | <u>Page</u> |
|-----------------------------------|-------------|
| Introduction.....                 | 3           |
| Body.....                         | 3           |
| Key Research Accomplishments..... | 4           |
| Reportable Outcomes.....          | 4           |
| Conclusion.....                   | 4           |
| References.....                   | N/A         |
| Appendices.....                   |             |
| SOW from proposal                 | 8           |

## **PITTSBURGH TUSKEGEE PROSTATE TRAINING PROGRAM**

**Alan Wells (Pittsburgh), Timothy Turner (Tuskegee)**

### **INTRODUCTION**

We proposed an extended training program for college undergraduates that aims to build a cadre of young investigators of color in prostate cancer. Prostate cancer disproportionately afflicts African-American men; this increased incidence is compounded by issues of access to and utilization of healthcare resources. As such, we feel that it is critically important to recruit researchers from this population if we are to conquer this disease. Numerous programs have attempted to recruit minorities to biomedical research and prostate cancer in particular. Often this involves a short period of research immersion during a summer semester. However, it has been shown that many of these trainees do not persevere in the selected area due to the singular nature of the experience. *We hypothesized that this combination of intensive summer immersions with ongoing academic year project extension will truly develop dedicated biomedical researchers in the area of prostate cancer.*

We proposed to test this hypothesis by designing an undergraduate research training program in prostate cancer that starts in the home college at Tuskegee University, immerses the students for 10 weeks in a specific research project with mentors at the University of Pittsburgh, and then continues the research after returning to Tuskegee under the aegis of a collaborating mentor. Thus, the student is to undertake the research over a one- to two-year period allowing the student to partake meaningfully in the full cycle of research – thesis generation, experimental planning, experimentation, presentation, and writing and publication. Thus, students will be recruited and selected at the beginning of the year, develop a project that involves collaboration between mentors at Pittsburgh and Tuskegee, take course that contribute to the project prior to the summer, initiate that project in depth at Pittsburgh, and then return to Tuskegee to continue the work as independent study, and communicate the findings at national meetings and in the literature. This extended involvement not only benefits the trainee but also forges collaborations between individual faculty members at the two different institutions. This should provide for further avenues that facilitate mainstreaming and integration of training and research for other undergraduate, graduate and post-doctoral trainees.

### **BODY**

The accepted Statement of Work (attached) described a series of tasks to accomplish the Goals of this training program. However, given the later funding date of May, the timeline for the tasks is changed so that we are partly into Year 3 of the program. We will state the SOW Task and then comment on the work accomplished. In sum, all Tasks for year 1 were accomplished successfully (last year's update featured earlier accomplishments). All of this year's tasks were accomplished.

#### **Year (2013)**

December 2012 – March 2013, Tuskegee University sophomore trainees will be selected as “*Prostate Cancer Scholars*” for summer internship at the University of Pittsburgh.

Three trainees were selected as a culmination of a new process at Tuskegee University. This involved coordinating the selection process for the PTPTP with other summer opportunities available to students at Tuskegee. This allows for a smoother selection and better matching as students can select based on subject matter and fit, and not on timing of selection. All summer programs are now selected together in March.

February – April 2014, Trainees will be selectively paired with University of Pittsburgh Faculty mentors according to their research interests.

The three students were paired with their mentors at the University of Pittsburgh, in two separate Departments, joining the prior four students who returned for their second year (Table 1).

May 2013 – August 2013, Trainees will travel to the University of Pittsburgh to begin their 10-week prostate cancer research experience.

The three new students, along with four returning students attended the 10 week onsite program as trainees in the Summer Undergraduate Research Program (SURP) of the Cellular and Molecular Pathology Graduate Program as described in the original proposal. This dual assignment of PTPTP and CMP-SURP allows for efficient use of established non-laboratory training activities, including journal clubs, presentation training, resume and application writing, and academic survival skills training. This culminated in their presenting their summer research at the combined program research retreat.

August 2013 - May 2014 Trainees will return from University of Pittsburgh, and continue their research training for the upcoming academic year under guidance of Tuskegee University Faculty Mentors.

These *Prostate Cancer Scholars* will prepare and present communications at national meetings.

The four trainees returned to Tuskegee. Under the guidance of the Tuskegee mentors, they prepared, submitted and presented their work at a national meeting at Tuskegee and two other national meetings (Table 2). Many of their presentations were noted with travel or poster awards.

### **Year 3 (2014)**

December 2013 – March 2014, The second group of Tuskegee University sophomore trainees will be selected as "*Prostate Cancer Scholars*" for summer internship at the University of Pittsburgh.

This is being reported on as the third group of trainees has been selected. All three year 3, Class of 2013 Scholars will be returning, and they will be accompanied by 3 new Scholars.

### **KEY ACCOMPLISHMENTS**

- Three new and four returning student trainees participated in the summer program
- All completed the summer training successfully
- The new trainees established/continued ongoing research activities at Tuskegee
- All the trainees presented posters or talks at a national meeting
- Three different trainees were recognized with awards at the national meetings
- A project has progressed to a paper in acceptance (Table 3)

### **REPORTABLE OUTCOMES**

*Abstracts – see Table 2.*

### **CONCLUSIONS**

This second year of this renewed training award has successfully reached defined milestones. The systems are firmly in place to implement the following years' cadre of trainees.

*Importance/Implications:* The Key Accomplishments above firmly demonstrate the ability to maintain a summer training program that has continuity with the home HBCU and the summer program itself. The outcomes over time will test whether this produces trainees more committed to research and/or prostate cancer than the usual one summer session disconnected from the home institution.

*Recommended changes:* The feedback from the trainees and mentors is that there is a learning curve during the first half of the summer program. Thus, the momentum gained during the last month of summer training needs to be seamlessly transferred to the promise of to return the second summer, but of leading to a publication. We have decided to emphasize the continuity of the program to attain lasting outcomes.

**Table 1. Class of 2013 student trainees and mentors**

| <b>Student</b> | <b>Project Title</b>  | <b>Pitt Mentor</b> |
|----------------|---|--------------------|
| Cainon, Ashley | Inter-differentiation of immune regulatory cells in prostate cancer   | Michael Shurin     |
| Davis, Miles   | Cell Cycle G2/M Arrest by Inhibition of Protein Kinase D through Anti-proliferation Activity of SD 208 in Human Prostate Cancer Cells               | Jianhua Luo        |
| Jacob, Devin   | Examining the Effects of Prostate Specific Membrane Antigen (PsmA) and Folate Levels on Gene Expression and Proliferation in Prostatic Cancer Cells | Denise O'Keefe     |

**Table 2. List of student abstracts presented at meetings during the fifth year of the program**

| <b>Student</b>          | <b>Abstract</b>   | <b>Meeting</b>   |
|-------------------------|---|--|
| Cainion, Ashley (2013)  | Inter-differentiation of immune regulatory cells in prostate cancer   | Annual Biomedical Research Conference for Minority Students, November 13-16, 2013, Nashville, TN<br><b>(**Travel Award Winner**)</b>   |
| Cainion, Ashley (2013)  | Inter-differentiation of immune regulatory cells in prostate cancer   | Tuskegee University Fourth Joint Annual Research Symposium (JARS), February 27-28, 2014, Kellogg Hotel & Conference Center, Tuskegee, AL <b>(**1<sup>st</sup> Place Poster Award Winner**)</b> |
| Cainion, Ashley (2013)  | Inter-differentiation of immune regulatory cells in prostate cancer   | Emerging Researchers National Conference, February 20-22, 2014, Washington, DC <b>(**1<sup>st</sup> Place Poster Award Winner &amp; Travel Awards Recipient**)</b>                             |
| Datiri, Yeipyeng (2012) | Exploring the Role of PSMA and Folate in Prostate Cancer and the Novel Localization of PSMA to the Mitochondria                       | Tuskegee University Fourth Joint Annual Research Symposium (JARS), March 14-15, 2013, Kellogg Hotel & Conference Center, Tuskegee, AL  |
| Datiri, Yeipyeng (2012) | Exploring the Role of PSMA and Folate in Prostate Cancer and the Novel Localization of PSMA to the Mitochondria                       | The National Conference on Undergraduate Research (NCUR), April 10-13, 2013, University of Wisconsin, La Crosse, WI  |
| Datiri, Yeipyeng (2012) | Exploring the Role of PSMA and Folate in Prostate Cancer and the Novel Localization of PSMA to the Mitochondria                       | Annual Biomedical Research Conference for Minority Students, November 13-16, 2013, Nashville, TN   |
| Davis, Myles (2013)     | Cell Cycle G2/M Arrest by Inhibition of Protein Kinase D through Anti-proliferation Activity of SD 208 in Human Prostate Cancer Cells | Tuskegee University Fourth Joint Annual Research Symposium (JARS), March 14-15, 2013, Kellogg Hotel & Conference Center,   |

|                           |   |   |
|---------------------------|---|---|
|                           |   | Tuskegee, AL  |
| Davis, Myles<br>(2013)    | Cell Cycle G2/M Arrest by Inhibition of Protein Kinase D through Anti-proliferation Activity of SD 208 in Human Prostate Cancer Cells               | Annual Biomedical Research Conference for Minority Students, November 13-16, 2013, Nashville, TN<br><b>(**Poster Award Winner in Cancer Biology Category**)</b>                             |
| Jacob, Devin<br>(2013)    | Examining the Effects of Prostate Specific Membrane Antigen (PsmA) and Folate Levels on Gene Expression and Proliferation in Prostatic Cancer Cells | Annual Biomedical Research Conference for Minority Students, November 13-16, 2013, Nashville, TN  |
| Myers, Kimberly<br>(2012) | ERK MAPK Activity Coincides With Prostate Cancer Cell PC3 Mesenchymal to Epithelial Transition  | The National Conference on Undergraduate Research (NCUR), April 10-13, 2013, University of Wisconsin, La Crosse, WI   |
| Myers, Kimberly<br>(2012) | E-cadherin Increases in EGFR Knockdown DU145 Cells  | Annual Biomedical Research Conference for Minority Students, November 13-16, 2013, Nashville, TN  |
| Myers, Kimberly<br>(2012) | The Role of miRNA200c on EGFR and E-cadherin in Prostate Cancer Cells   | Tuskegee University Fourth Joint Annual Research Symposium (JARS), March 14-15, 2013, Kellogg Hotel & Conference Center, Tuskegee, AL <b>(**1<sup>st</sup> Place Poster Award Winner**)</b> |
| Myers, Kimberly<br>(2012) | E-cadherin Increases in EGFR Knockdown DU145 Cells  | Emerging Researchers National Conference, February 20-22, 2014, Washington DC <b>(**Travel Awards Recipient**)</b>  |
| Royan Reddie<br>(2012)    | The Proliferation of DU145 Prostate Cancer Cells in a Pre-stressed Hepatic Niche  | Emerging Researchers National Conference, February 20-22, 2014, Washington, DC  |
| Smith, LeeKira<br>(2012)  | The Effects of ELL2 Loss in Murine Prostate on Vascularity or Angiogenesis Epithelial Defects   | The National Conference on Undergraduate Research (NCUR), April 10-13, 2013, University of Wisconsin, La Crosse, WI   |
| Smith, LeeKira<br>(2012)  | The Effects of ELL2 Loss in Murine Prostate on Vascularity or Angiogenesis Epithelial Defects   | Annual Biomedical Research Conference for Minority Students, November 13-16, 2013, Nashville, TN  |

**Table 3. List of student co-authors.**

| <b>Student Co-Author</b> | <b>Title</b>   | <b>Journal</b>                    |
|--------------------------|--|-----------------------------------|
| Datiri, Yeipyeng (2012)  | <i>"Novel nuclear localization of fatty acid synthase correlates with prostate cancer aggressiveness" was successfully entered into The American Journal of Pathology's online submission system".</i><br>(Accepted for Publication) | The American Journal of Pathology |



## Statement of Work (SOW)

### Year 1 (2012)

December 2011 – February 2012, Tuskegee University sophomore trainees will be selected as “*Prostate Cancer Scholars*” for summer internship at the University of Pittsburgh.

February – April 2012, Trainees will be selectively paired with University of Pittsburgh Faculty mentors according to their research interests. Student-paired mentors from the University of Pittsburgh will be paired with Tuskegee University Faculty who are in similar areas of research or with similar research interests to facilitate the seamless continuation of summer research projects at Tuskegee University.

May 2012 – August 2012, Trainees will travel to the University of Pittsburgh to begin their 10-week prostate cancer research experience.

August 2012 - May 2013 Trainees will return from University of Pittsburgh, and continue their research training for the upcoming academic year under guidance of Tuskegee University Faculty Mentors. These *Prostate Cancer Scholars* will prepare and present communications at national meetings.

### Year 2 (2013)

December 2012 – February 2013, The second group of Tuskegee University sophomore trainees will be selected as “*Prostate Cancer Scholars*” for summer internship at the University of Pittsburgh.

February – April 2013, Second-year Trainees will be selectively paired with University of Pittsburgh Faculty mentors according to their research interests. Student-paired mentors from the University of Pittsburgh will be paired with Tuskegee University Faculty who are in similar areas of research or with similar research interests to facilitate the seamless continuation of summer research projects at Tuskegee University.

May 2013 – August 2013, Second-year Trainees will travel to the University of Pittsburgh to begin their 10-week prostate cancer research experience. First-year Trainees (**Class of 2012**) will be invited to return to the University of Pittsburgh to continue their prostate cancer research projects through one of its existing summer programs for undergraduates.

August 2013 - May 2014, Second-year Trainees will return from University of Pittsburgh, and continue their research training for the upcoming academic year under guidance of Tuskegee University Faculty Mentors. First-year Trainees (Class of 2012) will have completed two years of intensive prostate cancer training and their data will be put into manuscript form and submitted to a peer-reviewed journal for publication. Both Tuskegee University and University of Pittsburgh Faculty Mentors will monitor the publication process and advise Trainees in the application process to graduate programs. These *Prostate Cancer Scholars* and the ones from the prior class (Class of 2012) will prepare and present communications at national meetings.

### Year 3 (2014)

December 2013 – February 2014, The third group of Tuskegee University sophomore trainees will be selected as “*Prostate Cancer Scholars*” for summer internship at the University of Pittsburgh.

February – April 2014, Third-year Trainees will be selectively paired with University of Pittsburgh Faculty mentors according to their research interests. Student-paired mentors from the

University of Pittsburgh will be paired with Tuskegee University Faculty who are in similar areas of research or with similar research interests to facilitate the seamless continuation of summer research projects at Tuskegee University.

May – August 2014, Third-year Trainees will travel to the University of Pittsburgh to begin their 10-week prostate cancer research experience. Second-year Trainees (**Class of 2013**) will be invited to return to the University of Pittsburgh to continue their prostate cancer research projects through one of its existing summer programs for undergraduates.

August 2014 - May 2015, Third-year Trainees will return from University of Pittsburgh, and continue their research training for the upcoming academic year under guidance of Tuskegee University Faculty Mentors. Second-year Trainees (Class of 2013) will have completed two years of intensive prostate cancer training and their data will be put into manuscript form and submitted to a peer-reviewed journal for publication. Both Tuskegee University and University of Pittsburgh Faculty Mentors will monitor the publication process and help Trainees in the application process to graduate programs. These *Prostate Cancer Scholars* and the ones from the prior class (Class of 2013) will prepare and present communications at national meetings.